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REMARKS

Application Status

Claims

Claims 1-18 are pending in the application after amendment herein.

Claims 13-18 are newly added.

Claims 5-6 and 11-12 were objected to but indicated to be allowable if rewritten in independent form.

Claims 1-4 and 7-10 were rejected.

Claims 6, 9, 10 and 12 are amended herein

Claims 1, 7 and 13 are independent claims.

Objections to Claims

Claims 6 and 12 were objected to for informalities based on recitation of 'step of deciding' and an alleged lack of antecedent basis from a previous step of deciding.

Appropriate correction has made to claims 6 and 12. Amended claim 6 recites 'a step of deciding.' Amended claim 12 recites 'the reassigning step is based on a step of deciding whether or not to reassign.

Claim 10 is objected to as being dependent upon claim 3. Amended claim 10 depends on claim 9. Other amendment is made to claims 9 and 10 to recite 'a substitute timeslot.'

Rejection of Claims under 35 USC 103(a)

Claims 1 was rejected under 35 USC 103(a) as unpatentable over Scholefield et al (USPN 5,742,592, herein "Scholefield") in view of Garcia-Luna-Aceves (US 2002/0167960 A1, herein "Garcia"). With respect to claim 1, the Office asserts that Scholefield teaches a method comprising portions of steps a, b and c of the claimed method. The Office acknowledges that Scholefield fails to teach selecting in a manner which is independent of timeslot selections made by other nodes of the network. However, the Office asserts that Garcia teaches selecting in a manner which is

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independent of timeslot selections made by other nodes of the network; the Office asserts that Garcia [0030] teaches “nodes admit new nodes for quasi-static scheduling independently of one another” for the purpose of “allowing a new node to start using the time slots … after it receives routing messages from some or all of its neighbors.”

In the ‘Response to Arguments’ of the current Office Action, the Office asserts that Garcia [0087] teaches time slots of the quasi-static schedule are assigned to nodes based simply on the identifiers of other nodes, i.e., not based on timeslot selections made by other nodes, and that although the timeslot selections are expected to be the same for each node in the steady state [0088], Garcia allegedly teaches asynchronous scheduling by each node assuming new quasi-static schedule immediately after receiving an updated node list causing different node to have different timeslot selections. Garcia [0094]. The Office alleges that quasi-static scheduling enables a scenario where a first existing receiving node has a schedule, a first new node enters, the first existing node updates its schedule independently, a second new node enters, and a second existing node updates its schedule independently and differently based on the first and second new nodes. Thus, the Office alleges Garcia teaches scheduling timeslots in a manner which is independent of timeslot selections made by other node to allow a new node to start using the time slots after it receives routing messages from some of its neighbors and that claim 1 is obvious over Scholefield in view of Garcia.

Applicant traverses this rejection and respectfully submits that Scholefield and Garcia, whether considered individually or in combination, fail to disclose, teach or suggest each and every limitation of claim 1. Claim 1 recites, in part, selecting at least one timeslot of the cycle in a manner which is independent of timeslot selections to be made by other existing receiving nodes of the network for receipt of burst transmissions. As the specification describes, applicant discovered that a TWIN network subject to distributed scheduling can support useful levels of throughput, even without coordination among the source nodes. [0006].

The TWIN network environment is multipoint-to-multipoint with distributed scheduling (i.e., a scheduler at each node). There are N contention points (places where possible collisions or conflicts) can occur, where N is the number of nodes and each node

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is assigned a unique wavelength channel. Each scheduler acts (i.e., assigns time slots) independently of other schedulers. However, use of bumping may introduce some coupling among the schedulers. In TWIN, the time slot is typically short (1 to tens of microseconds) and propagation delays may be large (ms to tens of ms). This setting is different from Scholefield's and Garcia's where propagation delays are much shorter and time slots are typically longer due to lower transmission rate.

As described in applicants' specification, each destination node makes timeslot assignments in such a way that no two sources are scheduled for burst arrivals at the destination within the same timeslot. Thus, collisions between arriving bursts at the destination are avoided. [0008]. At a receiving node and in response to a scheduling request, at least one timeslot of the cycle is selected in a manner which is independent of timeslot selections made by other nodes of the network for receipt of burst transmissions. [0007].

The distributed schedulers not communicate with each other. Typically, each distributed scheduler receives traffic information only in the timeslot requests issued to it by its requesting source nodes. ... Communication of schedules between source and destination nodes takes place via the "request" messages from the source, and "grant" messages from the destination." [0023]. When a Destination receives a request, it checks the state of all the timeslots in its scheduling cycle (emphasis added). [0027]. As the Abstract recites, "[a] distributed scheduler at each destination node selects timeslots for burst arrivals from requesting source nodes, irrespective of timeslot selections made by distributed schedulers at other nodes. Applicant respectfully submits that the cited references fail to teach or suggest selecting a timeslot in a manner independent of timeslot selections to be made by other existing receiving nodes.

First, the Office acknowledges that Scholefield fails to teach or suggest selecting in a manner which is independent of timeslot selections made by other nodes of the network. More pointedly, Scholefield cannot possibly ("may not" used in the Office Action is a misnomer) consider other receiving nodes because *there is only one base station* in Scholefield. Scholefield considers a multipoint-to-point scheduling problem with a base station acting as a scheduler and mobile stations as senders. It is noted that

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Schholefield's scheduling problem is widely known and there is no source conflict. In sharp contrast, in the TWIN system described by the applicants, scheduling is not only multipoint-to-multipoint, but each node acts both as a sender and as a receiver.

Second, Garcia fails to teach or suggest selecting in a manner which is independent of timeslot selections to be made by other existing receiving nodes of the network. In sharp contrast to the claimed invention, Garcia merely discloses that 'to use the time slots allocated for quasi-static scheduling, a node simply orders the IDs of the nodes known to belong to the known network membership list and maps them in an ordered manner to the time slots reserved for quasi-static scheduling. In steady state, all nodes that have been admitted into the [[network]] assign the same time slot to the same node ID, because all of them have the same list of admitted network nodes and all nodes used the same starting point (i.e., slot 1) for the allocation of nodes to slots in quasi-static scheduling.' Garcia [0031].

While asynchronous scheduling may occur in the quasi-static state since only a subset of the entire number of existing nodes may have an updated admitted nodes list, the timeslot selection performed by the subset of existing nodes is not independent of the timeslot selection to be performed by the subset of nodes nor the timeslot selection to be performed prospectively by the other existing nodes of the network and thus is in fact dependent on timeslot selection to be made by other nodes. That is, the round robin timeslot selection based on the list of admitted network nodes taught by Garcia is timeslot selection which depends upon the timeslot selections that are made and/or are to be made by other nodes of the network, whether all nodes in the network currently have an update admitted node list or not. Thus, timeslot selection in Garcia depends on timeslot selection by other nodes.

Garcia [0026] explains, "[t]he method used for quasi-static assignment of slots to nodes is based on information maintained at each node in the network. The starting point (slot 1) for the allocation of nodes to slots for quasi-static scheduling is maintained. The list of nodes that have been accepted as part of the network is maintained." Furthermore, the teaching and suggestion of Garcia is limited and not as expansive as that alleged by the Office. Garcia [0030] states, "nodes admit new nodes for quasi-static scheduling

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independently of one another, and a new node can start using the time slots reserved for quasi-static scheduling after it receives routing messages from some or all of its neighbors indicating that the node is part of its neighbors' routing tables." That is; while admission of the node may be conducted independently, the scheduling of time slots only occurs after indication that at least some neighbors have added the new node to their routing table list (i.e. admitted node list, see Fig 8). Thus, the scheduling at this subset of nodes (i.e., the some nodes and the newly admitted) is dependent upon each other and based on the round robin timeslot allocation based number of admitted nodes. As Garcia [0075] notes, "[a]n IR maps IR identifiers to time slots allocated for quasi-static scheduling only from the admitted nodes list." It should become clear that *there is only schedule used by all nodes*. In sharp contrast, in the claimed invention *there may be N schedules*, each for each of the N destinations, each schedule having timeslots selected independent of timeslot scheduling of other nodes.

The admitted network nodes list and round robin timeslot selection taught by Garcia is a proxy for timeslot selections to be made by all nodes, whether all those nodes are already updated with the newest admitted node list (i.e., steady-state) or only a subset of all of the nodes have been updated with the newest admitted node list (i.e. quasi-static state at least the newly admitted node and the node that has admitted the new node into its admitted node list coordinate timeslot selection). Thus, Garcia's assignment of timeslots among nodes of the network is coordinated and such a timeslot allocation scheme is not 'in a manner independent of timeslot selections to be made by other existing nodes of the network' as recited by claim 1. Accordingly, applicant respectfully submits that claim 1 is distinguishable from Scholefield and Garcia whether considered separately or in combination and thus, patentable over these references. Withdrawal of the rejection and allowance of claim 1 is requested.

Claim 2 and 8 were rejected as obvious over Scholefield in view of Garcia and further in view of Peterson (US 6,301,262). Claims 3, 4, 9 and 10 were rejected as obvious over Scholefield in view of Garcia and further in view of Padovani et al. (US 6,574,211) and Dail et al (US 5,570,335).

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Claims 2, 3 and 4 depend from and include all the limitations of base claim 1. Accordingly, Applicant submits these claims are patentable over Scholefield and Garcia based on claim dependency and for at least the reasons above stated.

Based on the above remarks and the amendments to the claims, applicants submit that the claims have been shown to be allowable in view of the prior art and that the basis for any rejections has been overcome.

With respect to claim 7, applicants reiterate the remarks made above with respect to claim 1. Applicants submit that claim 7 which recites, in part, selecting a first timeslot of the cycle in response to the scheduling request, wherein the first timeslot is selected in a manner which is independent of timeslot selections to be made by the others of the plurality of receiving nodes for receipt of burst transmissions, is patentable for over Scholefield and Garcia, whether consider individually or in combination, since these reference fails to disclose or suggest all claim limitations.

Claims 8, 9 and 10 depend from and include all the limitations of base claim 7. Accordingly, Applicant submits these claims are patentable over Scholefield and Garcia based on claim dependency and for at least the reasons above stated.

New claims

New claims 13-18 are presented to recite various aspects of the disclosed invention. Support for the new claims is found throughout the specification and in particular can be found at Figures 3-4 and in [0007], [0017], [0023] and [0027]; no new matter is added to the application with the addition of these new claims. Specifically, [0023] recites “[t]he distributed schedulers not communicate with each other. Typically, each distributed scheduler receives traffic information only in the timeslot requests issued to it by its requesting source nodes. ... Communication of schedules between source and destination nodes takes place via the “request” messages from the source, and “grant” messages from the destination.” For reasons somewhat similar to those stated above, the Applicant respectfully submits that Scholefield and Garcia, whether considered

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individually or in combination, fail to disclose, teach or suggest each and every limitation recited by independent claim 13. Specifically, independent claim 7 recites, in part, "receiving at least one request to schedule a timeslot of a recurrent cycle for receipt of burst transmissions from a sending node of the network and selecting a first timeslot of the cycle based on only the at least one request to schedule a timeslot that have been received." Scholefield and/or Garcia fail to disclose or suggest this claim feature and thus it is submitted that the claim is allowable.

Claims 14-18 depend from and include all the limitations of base claim 13. Accordingly, Applicant submits these claims are patentable based at least on claim dependency.

Conclusion

In view of the foregoing, allowance of all the claims presently in the application is respectfully requested, as is passage to issuance of the application. If the Examiner should feel that the application is not yet in a condition for allowance and that a telephone interview would be useful, he is invited to contact Applicants' undersigned attorney.

Respectfully submitted,

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Date: January 21, 2009